
From: Scott Quinlan [s.quinlan@gaiconsultants.com]
Sent: 6/9/2015 3:55:01 PM
To: Amelia H Boschen (Services - 6) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Amelia2]
CC: Kenneth Roller (Services - 6) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Kenne64]; Doug Wight (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Dougla7]; Oula K Shehab-Dandan (Services - 6) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Oula001]; Michael A Glagola (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Mic0210]; Jeffrey R Marcell (Generation - 3) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Jeff136]; John Klamut [J.Klamut@gaiconsultants.com]; John DeBarbieri [J.DeBarbieri@gaiconsultants.com]
Subject: Possum Point - Dewatering Waters to PWCSA
Attachments: 9158A-BC-018.pdf; 9158A-BC-012[S001].pdf; Ten States Standards wastewater.pdf

Amelia:

Pursuant to our discussions, we have developed conceptual considerations for discharging dewatering waters to the Prince William County Service Authority collection system. Based on our review, this alternative is feasible to pursue further.

Gravity Sewer Capacity

The 18-inch gravity sewer main on Possum Point Road is presumed to have a full flow capacity of approximately 2,100-gpm. This is based on the following information:

- 128 lf of 18-inch Ø RCP at 0.20% (Refer to attached Dominion drawing no. 9158A-BC-018).
- Manning's n of 0.013.

Gravity Sewer Peak Hourly Flows

The existing sanitary waste from Possum Point Power Station that contributes to the gravity main is estimated at 100 to 130-gpm (Refer to attached duty points for sewage pump station, Dominion drawing no. 9158A-BC-018).

There are an estimated forty (40) residential properties that are presumed to discharge to the same manhole upstream of the 18" gravity sewer discussed above. Assuming 3-persons/property the population is approximately 120-persons that contributes wastewater. The peak hourly flow/average flow factor is therefore estimated at 4.0 (Refer to attached from Ten States Standards). Assuming 100-gpd/person, the peak hourly flow from residential customers (including estimated infiltration) is estimated to be $120 \times 100 \times 4.0 = 48,000\text{-gpd} = 33\text{-gpm}$.

Therefore, the estimated excess capacity of the 18-inch gravity sewer main on Possum Point Road is $2,100\text{-gpm} - 33\text{-gpm} - 130\text{-gpm} = 1,937\text{-gpm}$.

This excess capacity for the 18-inch gravity sewer main should handle the additional dewatering water flows estimated at 200 to 500-gpm.

Additional Items as We Move Forward

- It is anticipated that Prince William County Service Authority would require pre-treatment of heavy metals that may potentially interfere with bio-sludge processes. Pretreatment would be required prior to discharging to their collection system. General pretreatment regulations are outlined in 40 CFR 403.8.
- A downstream capacity analysis may be necessary to justify the added 200 to 500-gpm dewatering flows to their system depending on Prince William County Service Authority requirements. In other words even though the 18-inch gravity pipe appears to have sufficient capacity, downstream pipes may or may not.
- The Station's existing submersible pump and 4-inch forcemain that presently directs the Station's sewage to the 18-inch gravity sewer main on Possum Point Road would need to be evaluated further to identify suitability for accepting the added ash dewatering flows. The 4-inch forcemain likely has capacity to convey only up to 195 to 235-gpm at higher end velocities of 5 to 6-fps. Possible other options include installing a separate, temporary pump and forcemain system for ash dewatering flows (discussed in the following bullet point) or temporarily replacing the Station's existing sewage pump with a larger pump and utilizing a smaller ash dewatering flow rate.
- A proposed 1.2-mile, 8-inch hdpe forcemain may be anticipated to convey Pond D water to the upstream manhole (for the 18-inch gravity sewer main) on Possum Point Road. It is presumed that the forcemain would be at grade, however, consideration would need to be made for burying the forcemain under existing driveways and restoring the driveways after completion of the project. Residential customers along Possum Point Road may not be favorable to this. Permission of course

must also be agreed in writing by the Town of Dumfries who is responsible for the Right-of-Way along Possum Point Road.

Let me know if you have any questions. Thanks.

Sincerely,

Scott C. Quinlan, PE
Director – Energy Water Resources Engineering and Planning

GAI Consultants, Inc.

500 Cranberry Woods Drive, Cranberry Township, PA 16066

724.772.2011 ext. 2409 | C 412.584.4508 |       eBrochures

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